CLAIMS

1. A Mg-based ferrite material having a composition of formula (1):

$Ca_aMg_bFe_cO_d$ (1),

wherein a, b, and c satisfy

$0.10 \leqq b/(b+c/2) \leqq 0.85$ and

$0 \leqq R(Ca) \leqq 0.10$,

wherein R(Ca) is expressed as

$$R(Ca) = a \times Fw(CaO) / (a \times Fw(CaO) + b \times Fw(MgO) + (c/2) \times Fw(Fe_2O_3))$$

(Fw(A): formula weight of A) ; and

d is determined by oxidation numbers of Ca, Mg and Fe;

wherein said Mg-based ferrite material has a saturation magnetization in the range of 30-80 emu/g,

wherein said Mg-based ferrite material has a dielectric breakdown voltage in the range of 1.0-5.0 kV.

2. A Mg-based ferrite material as claimed in claim 1, wherein b and c satisfy $0.30 \leqq b/(b+c/2) \leqq 0.70$.

3. A Mg-based ferrite material as claimed in claim 1 or claim 2,

wherein said Mg-based ferrite material has an average particle diameter in the range of 0.01-150 μm.

4. An electrophotographic development carrier, which comprises a Mg-based ferrite material according to any of claims 1-3.

5. An electrophotographic development carrier, which comprises a Mg-based ferrite material according to any of claims 1-3,

wherein said Mg-based ferrite material is coated with resin.

6. An electrophotographic developer, which comprises an electrophotographic development carrier according to claim 4 or 5, and a toner.

7. An electrophotographic developer as claimed in claim 6,

wherein the ratio of the toner to the carrier by weight is in the range of 2-40 wt%.

8. A process for producing a Mg-based ferrite carrier according to any of claims 1-3, which comprises the steps of:

i) mixing raw materials;

ii) sintering the mixed raw materials to grow particles, wherein a maximum temperature is in the range of 800-1500 °C; and

iii) heating the sintered raw materials under an oxygen-containing atmosphere to condition properties of the particles, wherein a maximum temperature in the range of 300-1000 °C;

9. A process for producing a Mg-based ferrite carrier as claimed in claim 8,

wherein an oxygen concentration of the atmosphere in step iii) is higher than that in step ii).

10. A process for producing a Mg-based ferrite carrier as claimed in claim 8 or claim 9,

wherein the atmosphere in step iii) is an inert gas atmosphere having an oxygen concentration of 0.05-25.0 vol.% on the basis of the total amount of the gases contained in the atmosphere.

11. A process for producing a Mg-based ferrite carrier as claimed in any of claims 8-10,

wherein the atmosphere in step ii) is an inert gas atmosphere having an oxygen concentration of 0.001-10.0 vol.% on the basis of the total amount of the gases contained in the atmosphere.

12. A process for producing a Mg-based ferrite carrier as claimed in any of claims 8-11,

wherein step i) of mixing raw materials comprises steps of:

preparing a slurry containing a Mg-containing compound and a Fe-containing compound; and

drying the slurry for granulation.

13. A process for producing a Mg-based ferrite carrier

according to claim 12,

wherein the slurry comprising a Mg-containing compound and a Fe-containing compound further comprises a Ca-containing compound.

14. A process for producing a Mg-based ferrite carrier according to claim 12 or 13,

wherein the slurry comprising a Mg-containing compound and a Fe-containing compound further comprises a binder,

wherein the content of the binder is in the range of 0.1-5 % by weight, based on the total amount of the raw materials in the slurry.